

## ON LAY VS SUB LAY IN VENTRAL HERNIA REPAIR

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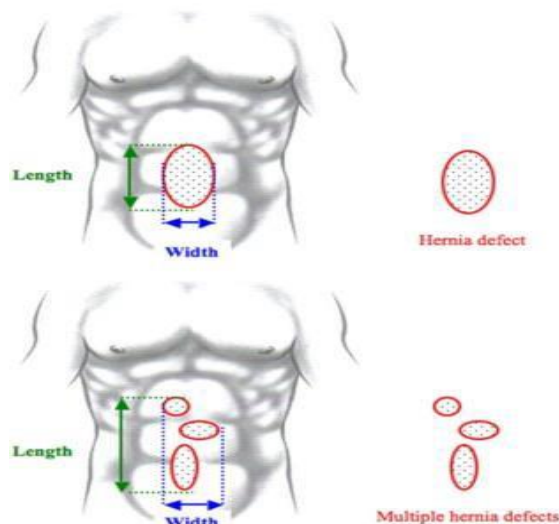
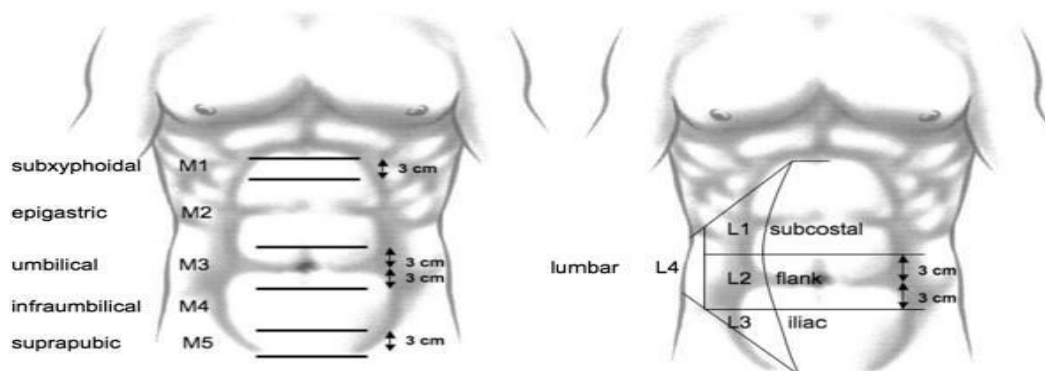


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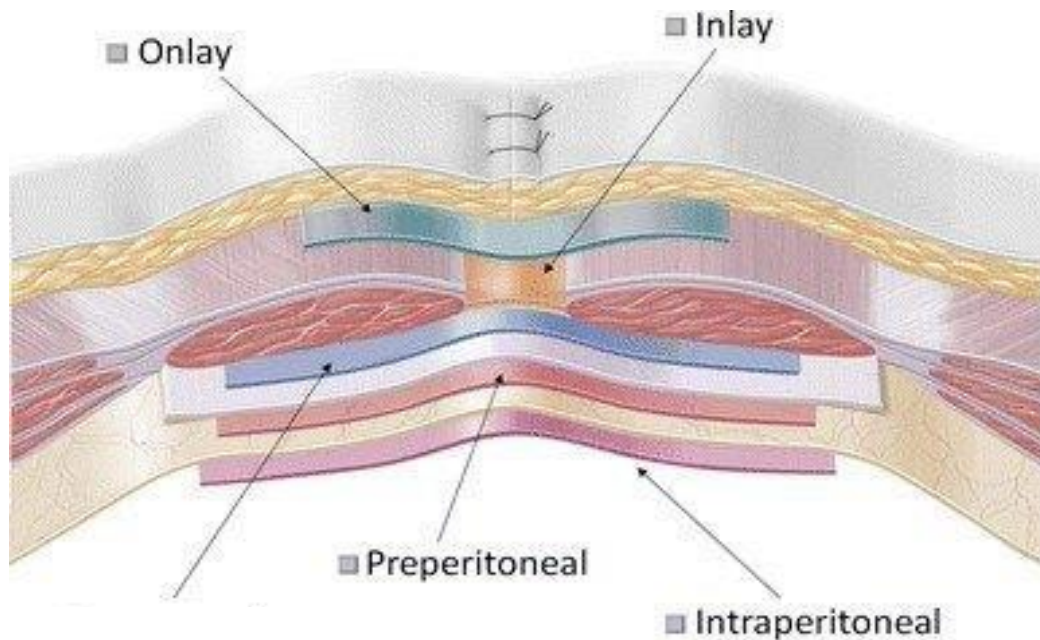
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### INTRODUCTION

- Ventral hernias are one of the most commonly encountered cases in surgical practice.
- Incidence of ventral hernia is around 15 to 20% worldwide.<sup>[1]</sup>
- Many options are available when surgical modality is planned. Most commonly used method is reduction of hernia and repair with a mesh. The mesh can be placed at various locations at different planes in the anterior abdominal wall.
- The controversy lies regarding the ideal plane for mesh placement.
- Most commonly done procedures amongst these is the onlay and sublay technique.
- This study aims to compare two of the commonly done procedures for the placement of the mesh.



E H S			
Incisional Hernia Classification			
Midline	subxyphoidal	M1	
	epigastric	M2	
	umbilical	M3	
	infraumbilical	M4	
	suprapubic	M5	
Lateral	subcostal	L1	
	flank	L2	
	iliac	L3	
	lumbar	L4	
Recurrent incisional hernia?		Yes	No
		O	O
length: cm		width: cm	
Width cm	W1	W2	W3
	<4cm	≥4-10cm	≥10cm
	O	O	O



**Retro-rectus/ sublay.**

### AIMS AND OBJECTIVES

- To compare the between the two positions i.e. onlay and sublay of mesh placement procedure in ventral hernia surgeries.
1. Time Taken
  2. Hospital Stay
  3. Post Op Pain
  4. Complications
  5. Recurrence

### MATERIALS AND METHODS

- A prospective comparative study conducted in Akash Institute Of Medical Science And Research Center Devanahalli, Bangalore.
- Total of 60 patients were selected for the study.
- They were divided alternatively into onlay and sublay groups (30 in each groups).
- After admission routine blood work up was done for ot and fitness was obtained.
- Mesh used in the procedure was a prolene mesh by ETHICON (a J& J Division).
- A medium weighted 15 X15cms mesh was used for the defect and was costing Rs 4500 at the time of the study.

### Inclusion criteria

- All ventral hernias in the age group of 20-75 yrs.

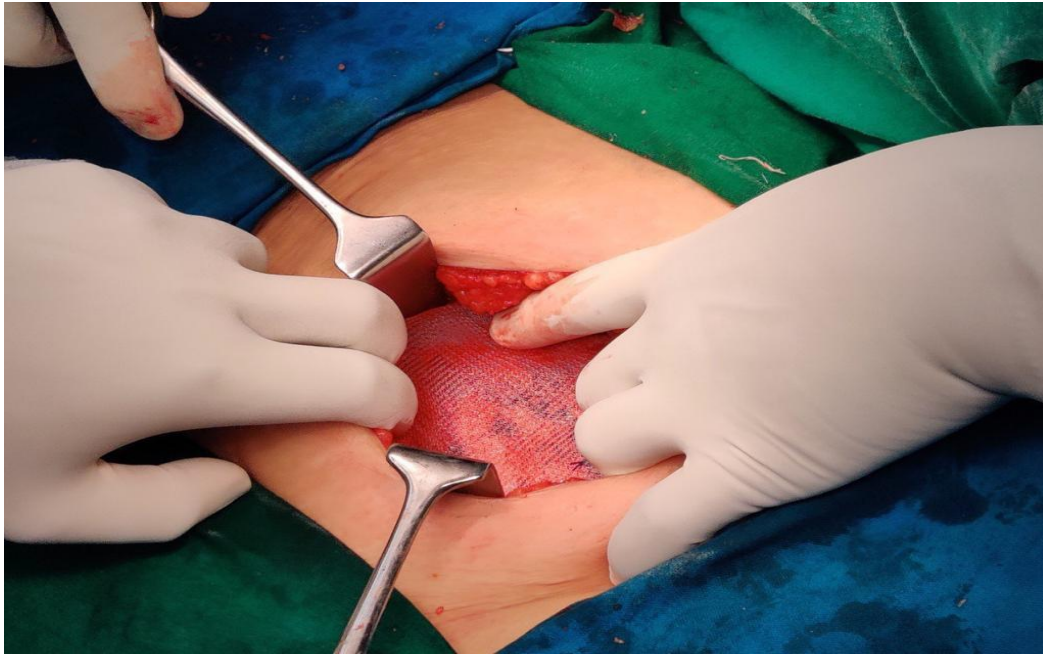
### Exclusion criteria

- Strangulated hernia
- Inguinal hernias
- Hernias due to malignancy
- Large ventral hernias with loss of domain
- Ascites
- Chronic liver disease
- Previous hernia with a mesh infection
- epigastric hernia

- BMI more than 30

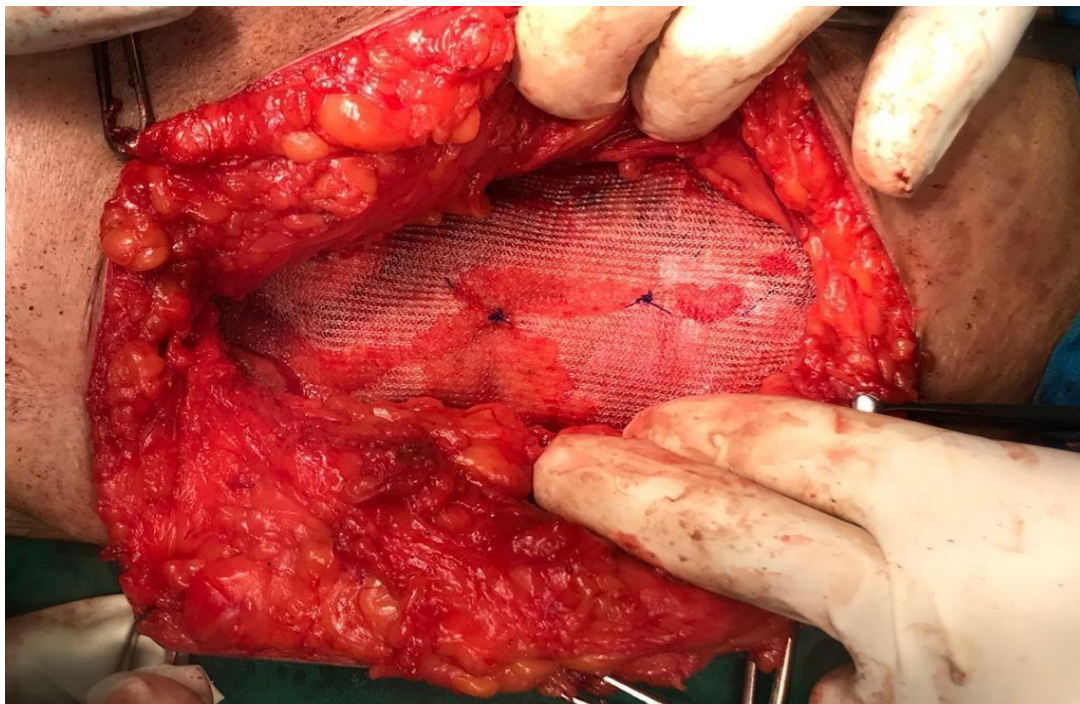
### Onlay Technique

- Incision taken
- Abdomen was opened in layers.
- Sac was identified and dissected.
- The contents of the sac were reduced.
- The sac was excised.
- In onlay technique, the defect is closed with prolene no 1.
- Adequate space is created around the defect by dissection.
- Mesh is placed over the anterior rectus anchored by prolene 2-0.
- A romovac suction drain is kept in the subcutaneous plane and the abdomen is closed in layers.



**Sublay**

- Abdomen is opened in layer till the neck of the hernial sac.
- Sac was opened and contents reduced and sac excised.
- Plane is created between the posterior rectus and rectus muscle on both sides.
- Care was taken not to injure the blood supply to the muscle.
- Posterior rectus along with the peritoneum is closed with prolene 2-0 in a continuous fashion.
- Approximate size of the mesh is placed over the posterior recuts and fixed with prolene 2- 0 at 2-point fixation.
- According to pascals law, the mesh is equally distributed all around the plane, without being curled up.
- Haemostasis is achieved and the anterior rectus is closed using continuous sutures using prolene no 1 in a continuous fashion.



**Post operatively**

- Peri operatively three doses of 2<sup>nd</sup> generation cephalosporins were given.
- In selective cases such as of elderly, co morbidities,

obesity, the antibiotics was continued for 5 days.

- Drain was removed on the 3<sup>rd</sup> or the 5<sup>th</sup> post operative day.

**Statistical analysis**

- Tabulation of all the data was done in excel and analysis was done using SPSS software of IBM version :25 for windows.
- Amount of blood loss
- Time taken for the surgery
- Post operative complications
- Surgical site infection [5<sup>th</sup> post operative day]
- Pain score
- Number of days of hospital stay were the variables assessed.

**Age group**

Age group	Onlay	Sublay
Less than 40yrs	8	4
40yrs - 60yrs	14	16
More Than 60	8	10

**Genderwise Distribution**

	Onlay	Sublay
Male	8	9
Female	22	21

**Duration of surgery**

Average Duration of Surgery [Min]	
Onlay	98
Sublay	122
Paired t test P <0.0001	

**Blood loss**

Mop count	
Onlay	7.3666
Sublay	6.3666
Paired t test P <0.0001	

**Complications**

Complications		
	Onlay	Sublay
Nil	23	27
SSI	6	3
Recurrence	1	0

**Pain score**

Pain score	
Onlay	4.8333
Sublay	4.1333

**Discharge Day**

Days of Discharge [Post op]		
	Onlay	Sublay
3 days	0	7
4 days	6	15
5 days	9	7
6 days	7	1
7 days	8	0

**Discussion**

- Abdominal wall hernia is a common surgical problem in clinical practice.
- The outcome of the surgery is based not only on the technique used but on the experience of the operator, meticulous dissection, tension free repair etc.
- Many methods are available to deal with these hernias. Small hernias less than 2.5cm in diameter are often successfully closed with primary tissue repairs.
- Commonly practiced techniques for hernia repair use mesh.<sup>[2]</sup>

**Discussion**

- The ideal prosthetic material for the reinforcement of the abdominal wall should:
  1. not be physically altered by tissue fluids,
  2. be chemically inert,
  3. not produce foreign body reactions
  4. be non-carcinogenic and non-allergenic
  5. resist mechanical strains
  6. have the ability to be sterilized.<sup>[3]</sup>

**Discussion**

- Most studies have also suggested that the mesh should atleast cover 5 cms around the defect.
- Sublay mesh has less number of complications.<sup>[3]</sup>
- Most common complication being seroma formation.<sup>[2,3,4,5]</sup>
- Recurrences can creep under the edges of the mesh if peripheral fixation is not adequate; this is particularly important around the umbilicus where an adequate overlap is necessary together with a slit to accommodate the linea alba.<sup>[4]</sup>
- Onlay mesh techniques give good results for repair of complex incisional hernias with significant loss of domain.<sup>[4]</sup>
- Closing the defect under tension leads to excessive early postoperative pain, ischemia, and suture cut-out; and it provides an ideal environment for bacterial growth and subsequent infection.<sup>[5]</sup>

**Discussion**

- Onlay group also presented comparatively higher concentrations of fibroblasts and more neovascularization.
- This may translate into a more advanced maturation phase of the repair process in these cases, favoring deposition of neocollagen over inflammatory or proliferative elements, resulting in a more uniformly organized fibrous tissue.
- Sublay group demonstrated an earlier phase of the inflammation-repair process, with higher densities of inflammatory elements, such as histiocytes and mononuclear infiltrate.
- Wall thickness and collagen density were greater following SL repair when compared to OL, being even more exuberant in the areas in proximity to suture stitch.<sup>[6]</sup>
- The ratio of type I/type III collagen, higher

expression of mature type I collagen in SL group indicates a more efficient fibrogenesis and may explain the lower recurrence rates reported in clinical studies comparing both techniques.<sup>[6]</sup>

#### Findings in our study

- It was seen that hernia was more common in females than in males.
- This may be attributed to the fact that women due to multiple pregnancies, the abdomen would have become lax and in most of cases, they would have undergone some form of surgical procedure, ie, tubectomy or LSCS.
- Another trend seen was paraumbilical and umbilical hernia was seen in younger population and incisional was seen in elderly.
- Sublay technique took more time than compared to onlay technique.

#### Findings in our study

- This is attributed to – meticulous and haemostasis, no drain required, preserve vascularity for the muscle. However, in onlay there is extensive subcutaneous dissection which causes more blood loss.
- In onlay, there was more surgical site infection when compared to sublay method due to the extensive fat dissection.
- Pain score in both the groups was almost the same.
- There was once case of recurrence of the hernia because of pregnancy in the on lay group.

#### CONCLUSION

- Onlay and sublay are both effective methods to repair incisional hernia.
- But if we have to weigh both the pros and complications and concluded that sublay is a better method even though it is more time consuming and has a bigger scar when compared to onlay.
- Even though onlay is a fast technique, but looking at the SSI and the recurrence rates, sublay is better in the long run.

#### Limitations

1. Alternative subjects – but some this couldn't be applied and changed on table
2. Follow up only for 6 months.

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